

IN THE SPECIFICATION:

On page 2, please replace the paragraph starting in line 2 with the following amended paragraph:

91 (b) The response speed is fast. The response speed of an organic light-emitting display device is on the order of ~~microsecond~~ microseconds ( $\mu$ s) while that of an LCD is on the order of ~~millisecond~~ milliseconds (ms).

On page 2, please replace the paragraph starting in line 10 with the following amended paragraph:

92 On the basis of these advantages, research and development of ~~an~~ organic light-emitting display devices have been promoted actively. Particularly, there have been carried out those of a polycrystalline silicon thin film transistor (p-Si TFT) type organic self-emission display system. Pixels of this display system are disposed in a matrix form and each connected p-Si TFTs for driving the display device so that such a display system can realize high resolution.

On pages 2-3, please replace the paragraph starting in line 20 with the following amended paragraph:

93 Fig. 10 shows schematically a ~~cross~~ cross-sectional view of an array substrate in a conventional organic light-emitting display device. An organic thin film layer including at least an organic luminous layer 113 is held between an anode 109 and a cathode 115. When an energizing voltage is supplied between the anode and the cathode, electrons and holes are injected into the organic thin layer where they are recombined. Thus, exciters are generated in the organic thin layer-. Light is emitted from the organic thin layer when the exciters lose energy by transferring from a higher energy level to a lower one.

On page 3, please replace the paragraph starting in line 7 with the following amended paragraph:

94 The organic light-emitting display device, as shown in Fig. 10, has an opening above the anode 109 ~~connected to~~ and a driving TFT. The driving TFT includes a p-Si layer 103, a gate insulating film 104, a gate electrode 105, and source and drain electrodes 107. A passivation film 110 and a partition insulating film 111 are formed over the p-Si layer 103, gate insulating film 104, gate electrode 105 and source and drain electrodes 107.

On page 3, please replace the paragraph starting in line 16 with the following amended paragraph:

95 The luminous intensity of such a conventional organic light-emitting display device is about a half of the luminous intensity (100 to 150 nt) of the LCD. Further, ~~eross~~ cross-talk occurs between neighboring pixels. Where, in particular, the color of red (R), green (G), or blue (B) is emitted from the pixel, colors from neighboring pixels are mixed so that the contrast of the organic light-emitting display device is considerably lowered.

On page 4, please replace the paragraph starting in line 13 with the following amended paragraph:

96 A first aspect of alight-emitting display device in accordance with the present invention includes pixels which are provided with a plurality of first electrodes electrically isolated from each other; second electrodes provided opposite to the first electrodes; a plurality of pixels held between the first and second electrodes; and a ~~light~~ light-reflecting surface disposed between adjacent ones of said pixel electrodes.

On page 6, please replace the paragraph starting in line 24 with the following amended paragraph:

97 Fig. 2 is a longitudinal ~~eross~~ cross-section of the organic light-emitting display device shown in Fig. 1;

On page 7, please replace the paragraph starting in line 8 with the following amended paragraph:

98 Fig. 4(a) shows a longitudinal cross cross-section of a pixel in accordance with the present invention;

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On page 8, please replace the paragraph starting in line 2 with the following amended paragraph:

99 Fig. 8 is a longitudinal ~~eross~~ cross-section of a pixel of a light-emitting display device in accordance with the present invention.

On page 8, please replace the paragraph starting in line 9 with the following amended paragraph:

Q10 Fig. 10 is a longitudinal ~~cross~~ cross-section of a pixel of a conventional organic light-emitting display device.

On pages 8-9, please replace the paragraph starting in line 15 with the following amended paragraph:

Q11 The preferred embodiments of the present invention will be explained in detail hereinafter with reference to the accompanying drawings. The first embodiment of the present invention is shown in Fig. 1 which is a schematic plan view of an array substrate 100 for an organic light-emitting display device. The array substrate 100 includes a display area 120 in which pixels 1 are disposed in a matrix form (not shown). Two sides of the display area 120 are provided with an X-direction driving circuit 121 and a Y-direction driving circuit 123. The X-direction driving circuit 121 is disposed on the right side of the drawing and connected to wires 122 led from the respective pixels. The Y-direction driving circuit 123 is disposed on the lower side of the drawing and connected to wires ~~123~~ 124 led from the respective pixels.--

On pages 11-12, please replace the paragraph starting in line 21 with the following amended paragraph:

Q12 The partition insulating film 111 has an opening or recess S defined between the neighboring pixels as shown in Figs. 4(a) and 4(b). Thus, the partition insulating film 111 is formed overall the periphery inside the edge of each pixel. Such an opening S is also schematically shown in Fig. 3 (b) . There are provided at the portion of the opening S inclined walls laminated with the partition insulating film 111, anode buffer layer 112 and cathode 115 on the side of the anode 109 (reference numeral 21 in Fig. 3 (b)) . Such an inclination is at an acute angle ( $\theta < 90^\circ$  ), preferably, more than 45 degrees with respect to the light-projecting surface, the anode 109 or the substrate 101. With this structure, light advancing in the horizontal direction, i.e., light components P<sub>2</sub> and P<sub>3</sub> shown in Figs. 4 (a) and 4 (b) are reflected on the surface of the cathode 115 made of a metallic film and advance toward the display surface . As a result, ~~there is increased~~ the luminous intensity of the display panel is increased.

On pages 12-13, please replace the paragraph starting in line 22 with the following amended paragraph:

Q13 Firstly, a light transmissible substrate 101 such as ~~the~~ a glass substrate is prepared. The undercoat layer 102 made of a lamination layer of a SiNx film with a thickness of 50 nm

Q13 and a SiO<sub>x</sub> film with a thickness of 100 nm is formed on a main surface of the glass substrate 101. The p-Si layer 103 with a thickness of 50 nm is then deposited on the undercoat layer 102 in an island shape.

On page 13, please replace the paragraph starting in line 10 with the following amended paragraph:

Q14 Ions are implanted into the p-Si layer 103 through the gate electrode 105 used as a mask. Thus, the region of the p-Si layer 103 positioned under the gate electrode 105 becomes a channel region 103b, the source region 103a and drain region 103c are respectively formed on both sides thereof.

On pages 13-14, please replace the paragraph starting in line 26 with the following amended paragraph:

Q15 A connecting hole is bored to reach the source and drain regions 103a and ~~103b~~ 103c through the interlayer insulating film 106 and the gate insulating film 104. A metallic film, such as, a laminated film of an Mo film with a thickness of 50 nm, an Al film with a thickness of 450 nm, and an Mo film with a thickness of 100 nm is embedded in this hole. Thus, the source and drain electrodes 107a and 107b are formed and the anode 109 is connected to the drain electrode 107b of the driving TFT.

On page <sup>14</sup>~~13~~, please replace the paragraph starting in line 4 with the following amended paragraph:

Q16 Next, the anode buffer layer 112 made of laminated layers of for hole transportation, injection and the like is deposited on an upper surface of the partition insulating film 111 and the anode 109. The total thickness of the laminated layers is 110 nm, for instance. Then, the organic luminous layer 113 and the cathode buffer layer 114 composed of an electron injection layer and the like are deposited in order. The organic luminous layer 113 and the cathode buffer layer 114 each are 30 nm in thickness. Finally, the cathode 115 is formed on the overall surface.

On page 16, please replace the paragraph starting in line 6 with the following amended paragraph:

Q17 At the portion indicated by the arrow S shown in Fig. 4 (a) or 4 (b) in the aforementioned embodiment, the light component ~~P3~~ P<sub>3</sub> passes through the partition

Q17 insulating film 111, is reflected by the cathode 115 via the anode buffer layer 112, and then advances toward the display surface. The light component ~~P3~~ P<sub>3</sub> is attenuated twice according to the absorption coefficient (absorptive coefficient) of the anode buffer layer 112 and advances toward the light-projecting surface. As a result, the efficiency is lowered. In order to prevent ~~it~~ that, where the cathode 115 is directly attached to the inclined wall surface 111F of the opening of the partition insulating film 111, attenuation of the light component P3 can be substantially avoided.

On pages 16-17, please replace the paragraph starting in line 21 with the following amended paragraph:

Q18 Fig. 6 is a longitudinal ~~eross~~ cross-section of the pixel of the second embodiment of an organic light-emitting display device in accordance with the present invention. The same numerals in Fig. 6 denote substantially the same or corresponding elements as those in Figs. 4(a) and 4(b) and the explanation thereof will be omitted.

On page 18, please replace the paragraph starting in line 1 with the following amended paragraph:

Q19 As mentioned above, an opening is provided between the neighboring pixels of the organic light-emitting display device and the wall surface of the opening of the partition insulating film is made at an acute angle with respect to the light-projecting surface, the anode 109 or the substrate 101 so that light leaking in the direction parallel to the light-projecting surface can be ~~taken out~~ guided to the light-projecting surface efficiently from the pixel.

On page 18, please replace the paragraph starting in line 11 with the following amended paragraph:

Q20 Namely, the electrode on the side opposite to the light-projecting surface is made of a material with a high reflection factor and the electrode is configured to make an acute angle with respect to the light-projecting surface at the end portion of each pixel, so that light emitted from the organic luminous layer can be ~~taken out~~ projected efficiently from the light-projecting surface.

On page 19, please replace the paragraph starting in line 7 with the following amended paragraph:

A21  
Now referring to Fig. 7, there is shown a longitudinal ~~eross~~ cross-section of an array substrate in an organic light-emitting display device as a third embodiment of the present invention. An organic luminous layer 113 is made of a highly polymerized compound, e.g., polyfluorene. The luminous layer 113 is formed by using a method of jetting an ink corresponding to a color of red (R), green (G) or blue (B). Namely, the highly polymerized system organic luminous material is sequentially jetted out toward an opening defined by a partition insulation film 111 and an anode buffer layer 112 so that the organic luminous layer 113 is formed. The thickness of the anode buffer layer 112 may be 30 nm while that of the luminous layer 113 may be 80 nm in this embodiment.

On pages 19-20, please replace the paragraph starting in line 22 with the following amended paragraph:

A22  
Since the luminous layer 113 is formed in such a way as set forth above by using the highly polymerized system luminous material, this embodiment is easily adaptive to changes in design of various sizes of the array substrate. Further, because an appropriate quantity of the luminous material is selectively jetted out toward a necessary portion, the luminous material may be efficiently used.

On page 20, please replace the paragraph starting in line 5 with the following amended paragraph:

A23  
Next, a fourth embodiment of the present invention will be described with reference to Fig. 8 which shows a cross-sectional view of an organic light-emitting display device. In this embodiment, a driving TFT (driving element) 45 is connected to a first electrode, i.e., an anode 109. As shown, the anode 109 is connected to a drain electrode 107b of the driving TFT 45 through an insulation film 116. A signal line 41 is formed on an interlayer-~~insulation~~ layer insulating film 106. The insulation layer film 116 is also provided to cover the signal line 41 and the interlayer-~~insulation layer~~ insulating film 106.

On page 20, please replace the paragraph starting in line 17 with the following amended paragraph:

A24  
According to this embodiment, since the insulation ~~layer~~ film 116 is provided between the first electrode 109 and the signal line 41, the first electrode 109 of this embodiment has more of a degree of freedom for disposition than that of the first, second or third embodiment

Q24 in which the first electrode 109 is disposed on the same plane as the signal line 41. In addition, this embodiment is capable of increasing a luminous area.

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On pages 20-21, please replace the paragraph starting in line 26 with the following amended paragraph:

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Q25 It should be noted that the present invention is not limited to the embodiments set forth above but has various variations. As shown in Fig. 9, for example, a pixel 1 includes a pixel switch (TFT) 44 to select a pixel to which a video signal is supplied from a Y-direction driving circuit 123 in response to a scanning signal supplied from an X-direction driving circuit 121, a first capacitor 47 to hold during one horizontal scanning period the video signal supplied from a signal line 41 through the pixel switch 44, a driving element (TFT) 45 to supply a driving current to a display element 46 in accordance with the video signal, and a reset circuit 48.

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On page 21, please replace the paragraph starting in line 13 with the following amended paragraph:

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Q26 The pixel switch 44 and the driving element 45 are composed of an n-type TFT and a p-type TFT, respectively. The reset circuit 48 includes a second capacitor 48a disposed between the drain electrode of the pixel switch 44 and the gate of driving element 45, a first switch 48b connected between the gate and drain electrode of the driving element 45 and a second switch 48c between the drain electrode of the driving element 45 and the first electrode of the display element 46.

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On page 22, please replace the paragraph starting in line 8 with the following amended paragraph:

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Q27 In the embodiments explained above, the anode is made transparent and disposed on the side of light-projecting surface and the cathode is provided as a light-reflecting electrode disposed on the side opposite to the light-projecting surface. However, there may be other structures. The cathode, for instance, which is made of an optically transparent and electrically conductive film maybe disposed on the side of light-projecting surface while the anode which is a laminated film made of an electrically conductive file and a metal layer may be disposed on the side opposite to the light-projecting surface.

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On pages 22-23, please replace the paragraph starting in line 21 with the following amended paragraph:

A28 In addition, a light-transmitting display device in the embodiments described above projects light to the ~~outer~~ outside through the array substrate on which TFTs and other elements are disposed. As one of its alternatives, the second electrode is made of a transparent conductive film so that light can be projected to the ~~outer~~ outside through the second electrode. In any cases, it is important to dispose a light-projecting surface between neighboring pixels in order for light traveling from one pixel toward the other of the neighboring pixels to pass through the light-projecting surface.--

On page 23, please replace the paragraph starting in line 7 with the following amended paragraph:

A29 By way of example, the opening defined by the anode buffer layer 112 and the partition insulation film 111 is provided at the entire surrounding of the pixel in the embodiments described above. The opening may be formed in a stripe shape along the ~~row~~ row of a pixel. In the case of color display, a mixture of colors between neighboring pixels can be suppressed significantly if each color of red, green or blue is formed in such a stripe shape.



CLAIM LISTING:

1. (Currently Amended) A light-emitting display device comprising:  
(1) a plurality of pixels disposed in a matrix form, said pixels ~~including~~ comprising,  
i) a plurality of first ~~electrode~~ electrodes electrically isolated from each other,  
ii) second electrodes provided opposite to said first electrodes, wherein one of said first and second electrodes is arranged in a light-projecting surface, and  
iii) a light-emitting device held between said first and second electrodes, said light-emitting device including at least a light-emitting layer; and  
(2) a light-reflecting surface provided adjacent said light-emitting layer and between adjacent ones of said pixels to reflect light traveling from the one of said pixels to adjoining pixels toward said light-projecting surface.

Q38  
2. (Currently Amended) A light-emitting display device according to claim 1, wherein:  
said light-emitting display device further includes partition insulation film to electrically isolate said first electrodes from each other;<sub>1</sub>,  
said partition insulation film define openings between said adjacent ones of said pixels, the other of said first and second electrodes provided opposite to said light-projecting surface via said light-emitting device includes inclined surfaces provided along said openings of said partition film;<sub>1</sub>, and  
said inclined surfaces are used for said light-reflecting surfaces and define an acute angle with respect to said light-projecting surface.

3. (Original) A light-emitting display device according to claim 2, wherein said second electrodes are continuously formed on said pixels.

4. (Original) A light-emitting display device according to claim 2, wherein said inclined surfaces are formed around said pixels.

5. (Currently Amended) A light-emitting display device according to Claim 1, wherein said light-emitting display device further includes partition films to electrically insulate said first electrodes from each other, said partition insulation films define openings

around said pixels, and said second electrodes are provided to cover said partition insulation films and include inclined surfaces at said openings which define an acute angle with respect to said light-projecting surface.

6. (Newly Added) A light-emitting display device comprising:

a substrate;

pixels provided in a matrix form on said substrate, said pixels each including,

i) first electrodes electrically isolated from each other,

ii) second electrodes provided opposite to said first electrodes, wherein said first electrodes or said second electrodes are optically transmissible and define a light-projecting surface, and

iii) luminous layer held between said first and second electrodes;

a light-reflecting surface provided adjacent said luminous layer and between adjacent ones of said pixels to reflect light traveling from the one of said pixels to adjoining pixels toward said light-projecting surface; and

thin film transistors connected to said pixels and provided between said pixels and said light-reflecting surfaces.

7. (Newly Added) A light-emitting display device according to claim 6, wherein said light-emitting display device further includes partition insulation film to electrically isolate said first electrodes from each other;

said partition insulation film define openings between said adjacent ones of said pixels;

the other of said first and second electrodes provided opposite to said light-projecting surface includes inclined surfaces provided along said openings of said partition film; and

said inclined surfaces are used for said light-reflecting surfaces and define an acute angle with respect to said light-projecting surface.

8. (Newly Added) A light-emitting display device according to claim 6, wherein said luminous layer is made of highly polymerized compound..

9. (Newly Added) A light-emitting display device according to claim 7, wherein said luminous layer is made of highly polymerized compound..

930 10. (Newly Added) A light-emitting display device according to claim 6, wherein said thin film transistors include poly crystalline silicon layers.

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